

In the claims:

1. (Currently amended) A method for generating a quality oriented significance map for assessing the quality of an image or video, comprising the following steps:

extracting features of the image or video using visual feature-based information and knowledge-based information;

determining a perceptual quality requirement of at least one extracted feature; and

integrating the extracted features and the perceptual quality requirement of the at least one extracted feature to form an array of significance level values using a nonlinear mapping function, thereby generating the quality oriented significance map;

wherein coupling effects as a result of the integration of the extracted features are used when forming the array of the significance level values, and wherein the quality oriented significance map is obtained using the following equation:

$$m_{s,i,j,t} = \sum_{n=1}^N f_{s,i,j,t}^n - \sum_k c^{lk} \cdot g_l(f_{s,i,j,t}^l, f_{s,i,j,t}^k)$$

wherein

$m_{s,i,j,t}$ is an element of the quality oriented significance map at scale s , position (i, j) and time t ;

$f_{s,i,j,l}^n$ is the n^{th} extracted feature,

c^{lk} is a coupling factor which denotes the coupling effects of combining $f_{s,i,j,l}^L$ and $f_{s,i,j,l}^k$;

n is the index of the extracted feature;

k is another index of extracted feature such that $1 < k < N$ and $k \neq L$;

N is the total number of extracted features;

L is the maximum value of $f_{s,i,j,l}^n$ denoted as

$$L = \arg \max(f_{s,i,j,l}^n)_L$$

g_l is the nonlinear mapping function.

2. (Canceled)

3. (Currently amended) The method according to claim 2 1, wherein an absolute motion and a relative motion are determined, and are used to determine a quality level value of the pixel or region of the image or video, wherein the determined quality level value is a perceptual quality requirement used for generating the quality oriented significance map.

4. (Canceled)

5. (Canceled)

6. (Canceled)

7. (Currently amended) The method according to claim 6 1, wherein the nonlinear ~~coupling~~ mapping function is defined as:

$$g_1(x, y) = \min(x, y)$$

8. (Currently amended) The method according to claim 4 1, wherein the integration of the extracted features is performed by determining a weight to each of the extracted features, adding the weighted extracted features, and applying the nonlinear mapping function to the accumulated features, thereby forming the array of the visual significance level values.

9. (Currently amended) The method according to claim 8, wherein the quality oriented significance map is obtained using the following equation: $m_{s,i,j,t} = g_2(w_1 f_{s,i,j,t}^1 + w_2 f_{s,i,j,t}^2 + \dots + w_n f_{s,i,j,t}^n)$

wherein

$m_{s,i,j,t}$ is an element of the quality oriented significance map at scale s , position (i, j) and time t ;

w_n is weight of the extracted feature;

$f_{s,i,j,t}^n$ is the extracted feature;

n is the n^{th} index of the extracted feature; and

g_2 is the nonlinear mapping function.

10. (Original) The method according to claim 9, wherein the nonlinear mapping function is defined as:

$$g_2(x) = \sqrt[n]{x + C}$$

wherein α is a parameter for giving a nonlinear property,
and

c is a constant.

11. (Original) The method according to claim 1, the generated quality oriented significance map is further processed in a post processing step to enhance the quality of the generated quality oriented significance map.

12. (Original) The method according to claim 11, wherein the post processing step is performed using a Gaussian smoothing technique.

13. (Currently amended) A device for generating a quality oriented significance map for assessing the quality of an image or video, comprising:

an feature extraction unit for extracting features of the image or video using visual feature-based information and knowledge-based information;

a determination unit for determining a perceptual quality requirement of at least one extracted feature; and

an integration unit for integrating the extracted features and the perceptual quality requirement of the at least one extracted feature to form an array of significance level values using a nonlinear mapping function, thereby generating the quality oriented significance map;

wherein coupling effects as a result of the integration of the extracted features are used when forming the array of the significance level values, and wherein the quality

oriented significance map is obtained using the following equation:

$$m_{s,i,j,t} = \sum_n^N f_{s,i,j,t}^n - \sum_k^L c^{Lk} \cdot g_1(f_{s,i,j,t}^1, f_{s,i,j,t}^k)$$

wherein

$m_{s,i,j,t}$ is an element of the quality oriented significance map
at scale s , position (i, j) and time t ;

$f_{s,i,j,t}^n$ is the n^{th} extracted feature,

c^{Lk} is a coupling factor which denotes the coupling effects
of combining $f_{s,i,j,t}^L$ and $f_{s,i,j,t}^k$;

n is the index of the extracted feature;

k is another index of extracted feature such that $1 < k < N$ and
 $k \neq L$;

N is the total number of extracted features;

L is the maximum value of $f_{s,i,j,t}^n$ denoted as

$$L = \arg \max(f_{s,i,j,t}^n)_L$$

g_1 is the nonlinear mapping function.

14. (Currently amended) A computer readable medium, having a program recorded thereon, wherein the program is to make the computer execute a procedure for generating a quality oriented

significance map for assessing the quality of an image or video, comprising the following steps:

extracting features of the image or video using visual feature-based information and knowledge-based information;

determining a perceptual quality requirement of at least one extracted feature; and

integrating the extracted features and the perceptual quality requirement of the at least one extracted feature to form an array of significance level values using a nonlinear mapping function, thereby generating the quality oriented significance map;

wherein coupling effects as a result of the integration of the extracted features are used when forming the array of the significance level values, and wherein the quality oriented significance map is obtained using the following equation:

$$m_{s,i,j,t} = \sum_n f_{s,i,j,t}^n - \sum_k c^{lk} \cdot g_l(f_{s,i,j,t}^l, f_{s,i,j,t}^k)$$

wherein

$m_{s,i,j,t}$ is an element of the quality oriented significance map at scale s , position (i, j) and time t ;

$f_{s,i,j,t}^n$ is the n^{th} extracted feature,

c^{lk} is a coupling factor which denotes the coupling effects of combining $f_{s,i,j,t}^L$ and $f_{s,i,j,t}^k$

n is the index of the extracted feature;

k is another index of extracted feature such that $1 < k < N$ and $k \neq L$;

N is the total number of extracted features;

L is the maximum value of $f_{s,i,j,t}^n$ denoted as

$$L = \arg \max(f_{s,i,j,t}^n)_L$$

g_L is the nonlinear mapping function.

15. (Canceled)